

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of : Meng Tao, et al.
Application No. : 10/822,343
Filing Date : April 12, 2004
Art Unit : 1775
Examiner : Timothy M. Speer
For : SUPPRESSION OF CHEMICAL REACTIVITY ON
SEMICONDUCTOR SURFACES
Confirmation No. : 3111

DECLARATION UNDER 37 C.F.R. § 1.132

I, Meng Tao, declare that:

1. I am a named inventor in the above-identified U.S. Application No. 10/822,343 filed April 12, 2004.

2. I, as one of skill in the pertinent art of the application for patent, confirm that the disclosure of the as-filed application for patent is an original idea and we, the inventors, realized among other things and, as reflected within the scope of the claims, a semiconductor surface free of interfacial reactions that comprises a semiconductor surface with one atomic layer of valence-mending atoms that create a second surface without dangling bonds, wherein the semiconductor surface is a (100) surface of a Group IV semiconductor material.

3. At the time of filing the application for patent, it was already known to one skilled in the relevant art that arsenic cannot be a valence mending atom as claimed and cannot, on a (100) surface of a Group IV semiconductor material, create a second surface without dangling bonds, because arsenic has 5 valence electrons and, as was already known to one skilled in the relevant art, when provided on such a (100) surface, such as silicon, arsenic will covalently bond two silicon atoms on the (100) surface resulting in two electron pairs and leave 1 dangling bond. Accordingly, as was already known to one skilled in the relevant art,

were arsenic to be applied on a silicon (100) surface, there will be one dangling bond per atom on the second surface and, hence, a silicon (100) surface layered with arsenic does not provide a second surface without dangling bonds.

4. I confirm, as was already known to one skilled in the relevant art, that Kirk does not teach or make obvious the limitations of Claims 32-33, 35-36 and 41-44 because Kirk relies on arsenic which, among other things, does not teach each and every element of Claims 32-33, 35-36 and 41-44.

5. I confirm that this declaration substantiates what which was appreciated by myself and the other inventors at the time of filing the application for patent, that a reaction of a silicon (100) surface with arsenic does not meet the limitations of Claims 32-33, 35-36 and 41-44 and it would not have been obvious to one of skill in the relevant art to look to Kirk to teach that which is provided in Claims 32-33, 35-36 and 41-44 because Kirk's teachings lack and do not suggest elements essential to what is provided in Claims 32-33, 35-36 and 41-44.

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



Meng Tao

April 28, 2008

Date